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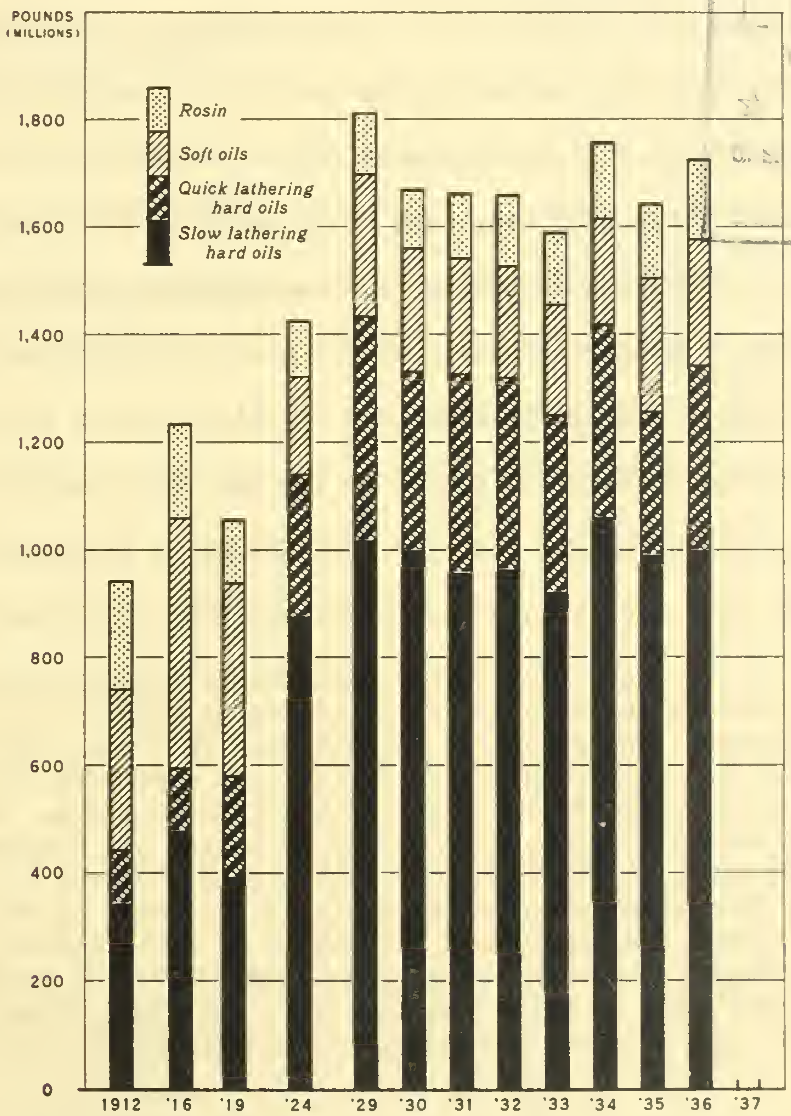
THE FATS AND OILS SITUATION

This month's issue is devoted largely to production, imports, and prices of the fats and oils used in the manufacture of soap.

UTILIZATION OF FATS AND OILS AND ROSIN IN SOAP



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SUMMARY OF THE SOAP OIL SITUATION

For some time soapers, in company with other fats and oils consumers, were faced with a shortage of fats and oils, rising prices, and uncertainty as to the course excise taxes might take. Now, supplies seem to be more plentiful and prices are easier.

During the first half of the current calendar year, domestic production of major soap fats has been well above production in the same period of 1936, imports have been comparatively large and plentiful supplies of all domestic vegetable oils are forecast for the remainder of the year. New fats and oils are being utilized, each contributing little individually; but the aggregate contribution amounting to an appreciable percentage.

According to a recent release by the Association of American Soap and Glycerine Producers, soap sales reached a new high mark in the first quarter of 1937, being even slightly in excess of the big third quarter 1936 sales, and total soap deliveries for the year 1936 showed an increase of 8.3 percent over 1935, with the sales value in dollars being 12.8 percent greater.

Five of the 6 years 1931-36 show relatively slight variation in the percentage of slow lathering oils, quick lathering oils, and soft oils used in soap manufacture. One exception was the year 1935 when the quick lathering oils contributed only 16 percent of the total saponifiable materials compared with an average of 21 percent in the other 5 years. (See table 3). One percent of this difference was made up by rosin, and 4 percent by miscellaneous soft oils. The same year that showed the drop in percentage consumption of the quick lathering ingredients (coconut, palm-kernel and babassu oils) showed also decreased production of white laundry bars with materially increased production of yellow laundry bars and soap chips or flakes. (See table 4). Yellow laundry bars and chips, flakes or powdered soap for use in public laundries use much less coconut oil than other kinds of soap.

Shifts in kinds of soap produced are accounted for partly by changes in demands of consumers and partly by changes in price and in the availability of different types of soap fats.

Soap imports have been unimportant, averaging between 5 and 6 million pounds annually, 1922 to 1933. After the 3-cent-per-pound excise tax was placed on the major imported soap oils, and before it was placed on soap, more than 34 million pounds were imported. After the tax was placed on soap, imports dropped again, amounting to less than 4 million pounds in 1936. (See table 8.)

An interesting recent development in the soap field is the organization of a new unit of the American Society for Testing Materials for the purpose of working on the standardization of soap and detergents and their constituent materials.

Prices

Prices of the principal soap fats and oils averaged slightly lower in July 1937 than in June and lower than the average prices for January to June. Prices in the first half of this year, however, were considerably higher than the average prices for January to June 1936. Prices in the first half of 1936 were definitely higher than average prices for the year 1935 and averaged almost double the prices obtaining in the first 4 months of 1934. In short, prices of all the major soap oils have been higher in price so far in 1937 than they averaged even in the "high" year 1929. (See tables 1 and 24.)

The wholesale price of soap tends to fluctuate less widely than the price of oils going into their manufacture, but they follow the broad movements of the oil prices.

Availability of Materials

Tallow

Production of tallow is expected to be lower during the last half of 1937 than it was in the same period in 1936. But total production for the year 1937 may be equal to or slightly above production in 1936, which amounted to 608 million pounds compared with 442 million pounds in 1935 and an average of 630 million pounds in the 5 years 1930-34.

Coconut oil

Indicated consumption of coconut oil for all purposes in the United States for the first 6 months of 1937 is about 56 million pounds below the same period of 1936, but its use in oleomargarine has been some 50 million pounds less than in the first half of 1936 and stocks are lower than a year ago at this time. Therefore the amount of coconut oil used in soap January to June 1937 may have been as great or greater than in the same period last year. Reports from the Philippines indicate expected increased supplies of copra during the remainder of 1937.

Vegetable oils

Vegetable oil refining foots and some vegetable oils contribute a goodly percentage to soap materials. Therefore, the prospective large cotton, corn, and soybean crops will have direct and indirect effect on the total supply of soap materials.

Palm oil

Imports of palm oil into the United States in 1936 were more than double imports in 1934 and imports for the year 1937 promise to be still larger as imports in the first half exceeded imports in the first 6 months of 1936 by more than 6 percent.

Palm-kernel oil and babassu oil

Imports into the United States of palm-kernel oil and kernels in terms of oil equivalent have amounted to more than 100 million pounds in the first 6 months of 1937 compared with 32 million pounds during the whole of 1936.

Oil equivalent of imported babassu nuts amounted to about 35 million pounds in 1936, the first year for which data are available. During the first half of 1937 oil equivalent of imports amounted to almost 27 million pounds.

Marine animal oils

Domestic production of fish oils has increased steadily in the past 6 years, mounting from 64 million pounds in 1931 to 267 million in 1936. The new season is just opening. Production of whale oil is an industry carried on by huge floating factories outside the borders of individual nations. Production is attributed to the nation under whose flag the floating factory operates. Prospects for the 1937-38 whaling season are that considerably more whaling will be carried on under the American flag than in recent years. If the season is a good one "domestic production" may be materially increased.

Table 1.-Price per pound of specified soap oils, selected years, 1912-37

Year	Coconut oil, crude, Pacific Coast	Palm-kernel oil, denatured N. Y.	Palm oil, crude, N. Y.	Tallow, inedible, Chicago	Sardine oil, Pacific Coast	Cotton-seed oil, crude, f.o.b. S.E.mills	Olive oil, prime foots, N. Y.
	Cents	Cents	Cents	Cents	Cents	Cents	Cents
1912	(7.1)	---	---	6.4	---	5.1	---
1913	(9.2)	---	7.4	6.5	---	5.9	7.8
1914	(9.6)	---	8.1	6.4	---	5.7	8.7
1916	(12.6)	---	12.2	9.4	---	9.3	10.7
1919	15.3	1/18.2	2/18.0	14.0	---	18.6	3/21.0
1921	8.1	1/ 9.5	7.0	5.3	---	6.2	8.5
1929	7.1	1/ 8.4	8.2	8.0	6.1	8.1	9.7
1932	3.2	4.8	3.8	2.7	1.9	3.1	4.6
1933	3.0	4.3	3.8	3.0	2.2	3.7	5.5
1934							
Jan.-Apr.	2.5	4/ 4.1	3.8	3.0	2.2	4.1	6.7
July-Dec.	5/ 5.7	5/6/ 5.9	5/ 6.3	4.5	3.0	6.9	7.3
1935	7.4	7.5	7.7	6.2	4.6	9.2	8.6
1936							
Jan.-June	7.2	7.8n	7.6	5.0	4.4	8.3	8.3
Sept.-Dec.	9.5	8.9	8.3	7.1	4.8	9.0	9.5
1937							
Jan.-June	10.6	10.0	9.6	8.6	6.9	9.5	11.6
June	8.6	8.8	9.0	8.2	6.9n	8.2n	11.2n
July	8.1	8.5	8.7	8.2	5.9	8.0n	11.2n

1/ Quoted as natural. 2/ Average for 10 months. 3/ Average for 8 months.

4/ Barrel price.

5/ Includes 3 cent excise tax on first domestic processing imposed by Revenue Act of 1934, beginning May on palm and palm-kernel oils, June on coconut oil, and continuing to date.

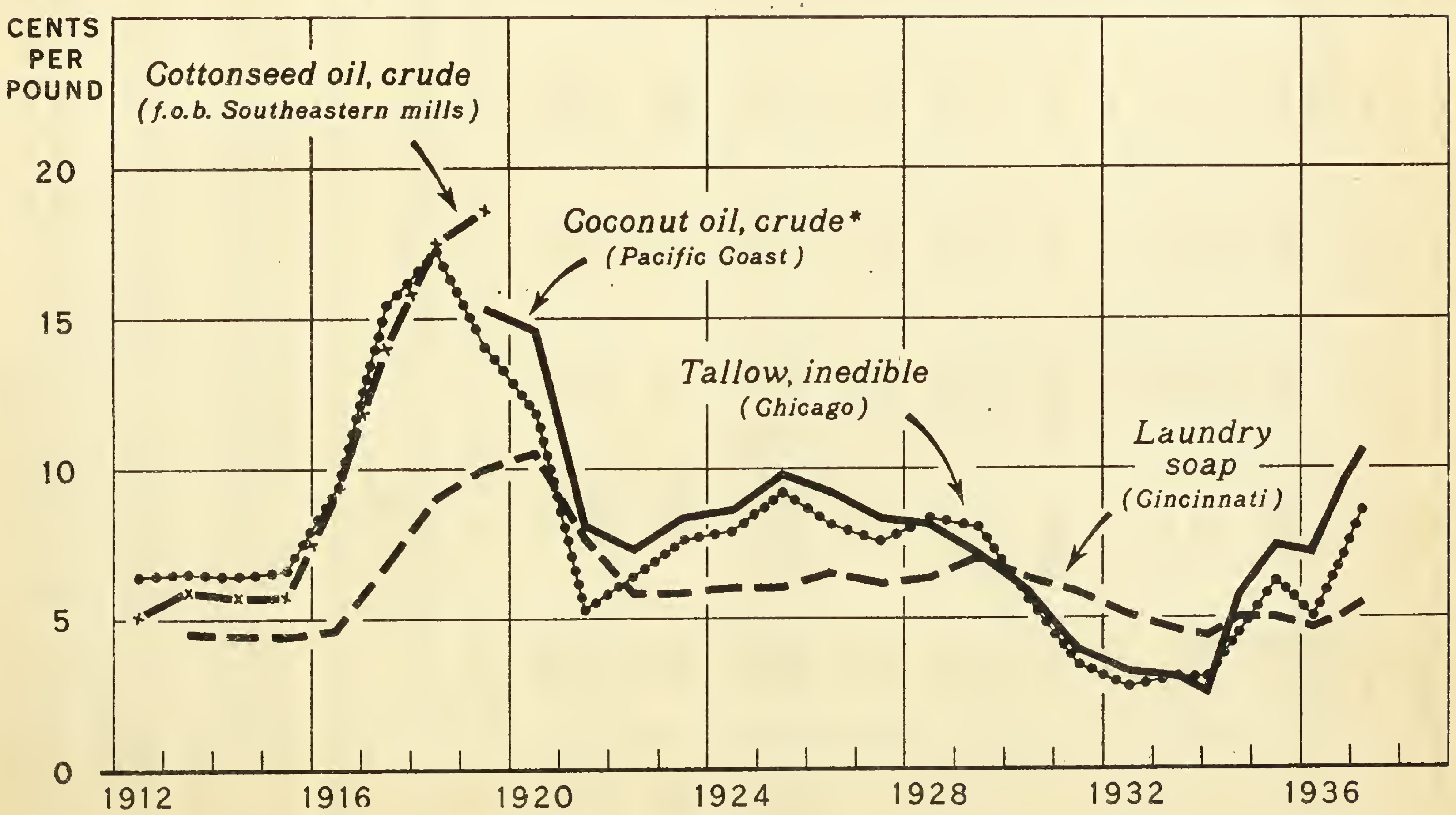
6/ Average September-December; quoted as bulk, beginning September 1934.

Compiled from the Oil, Paint, and Drug Reporter, average of quotations for Saturdays during the month, except tallow, which is from the National Provisioner average of weekly quotations during the month. Figures in parentheses are interpolated.

Coconut, sardine, and cottonseed oil are quoted in tanks; palm, and olive oil foots in casks.

For rates of duty and excise taxes on the above fats and oils, see table 166 in Fats, Oils, and Oleaginous Raw Materials, U. S. Department of Agriculture Statistical Bulletin No. 59, May 1937.

PRICES OF COCONUT AND COTTONSEED OILS, TALLOW AND LAUNDRY SOAP, 1912 TO DATE



*INCLUDES 3 CENTS TAX ON FIRST DOMESTIC PROCESSING, BEGINNING JUNE 1934

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FIGURE 1

Table 2.- Soap: Materials used in manufacture, classified according to soap making characteristics, specified years, 1912-36

Year	Hard slow lathering fats 1/			Hard quick lathering fats 2/			Soft oils 3/			Total fats and oils	Rosin 4/	Total fats and rosin	Percentage rosin is of total
	Total	Percentage of - Total fats	Percentage of - Total including rosin	Total	Percentage of - Total fats	Percentage of - Total including rosin	Total	Percentage of - Total fats	Percentage of - Total including rosin				
	Mil.lb.	Percent	Percent	Mil.lb.	Percent	Percent	Mil.lb.	Percent	Percent	Mil.lb.	Mil.lb.	Mil.lb.	Percent
1912	342	46.2	36.3	100	13.4	10.6	299	40.4	31.8	741	(200)	941	21.3
1914	392	47.9	39.1	109	13.3	10.9	317	38.8	31.6	818	(185)	1,003	18.4
1916	477	45.0	38.6	117	11.1	9.5	465	43.9	37.7	1,059	(175)	1,234	14.2
1919	392	41.8	37.1	187	20.0	17.7	358	38.2	33.9	937	120	1,057	11.4
1924	876	66.3	61.4	264	20.0	18.5	181	13.7	12.7	1,321	105	1,426	7.4
1929	1,017	59.9	56.1	417	24.6	23.0	264	15.5	14.6	1,698	114	1,812	6.3
1930	999	64.0	59.9	332	21.3	19.9	229	14.7	13.7	1,560	109	1,669	6.5
1931	957	62.1	57.6	368	23.9	22.1	216	14.0	13.1	1,542	120	1,662	7.2
1932	962	63.0	58.0	357	23.3	21.5	208	13.7	12.5	1,527	131	1,658	7.9
1933	921	63.3	58.0	329	22.5	20.7	206	14.2	13.0	1,456	132	1,583	8.3
1934	1,060	65.7	60.3	358	22.1	20.4	197	12.2	11.2	1,616	142	1,757	8.1
1935	989	65.7	60.2	267	17.8	16.2	248	16.5	15.1	1,504	139	1,643	8.5
1936	998	63.3	57.8	5/343	21.7	19.9	236	15.0	13.7	1,578	148	1,726	8.6

1/ Includes tallow, hydrogenated whale and fish oils, greases and palm oil, negligible amounts of lard, animal stearin, vegetable tallow, etc.

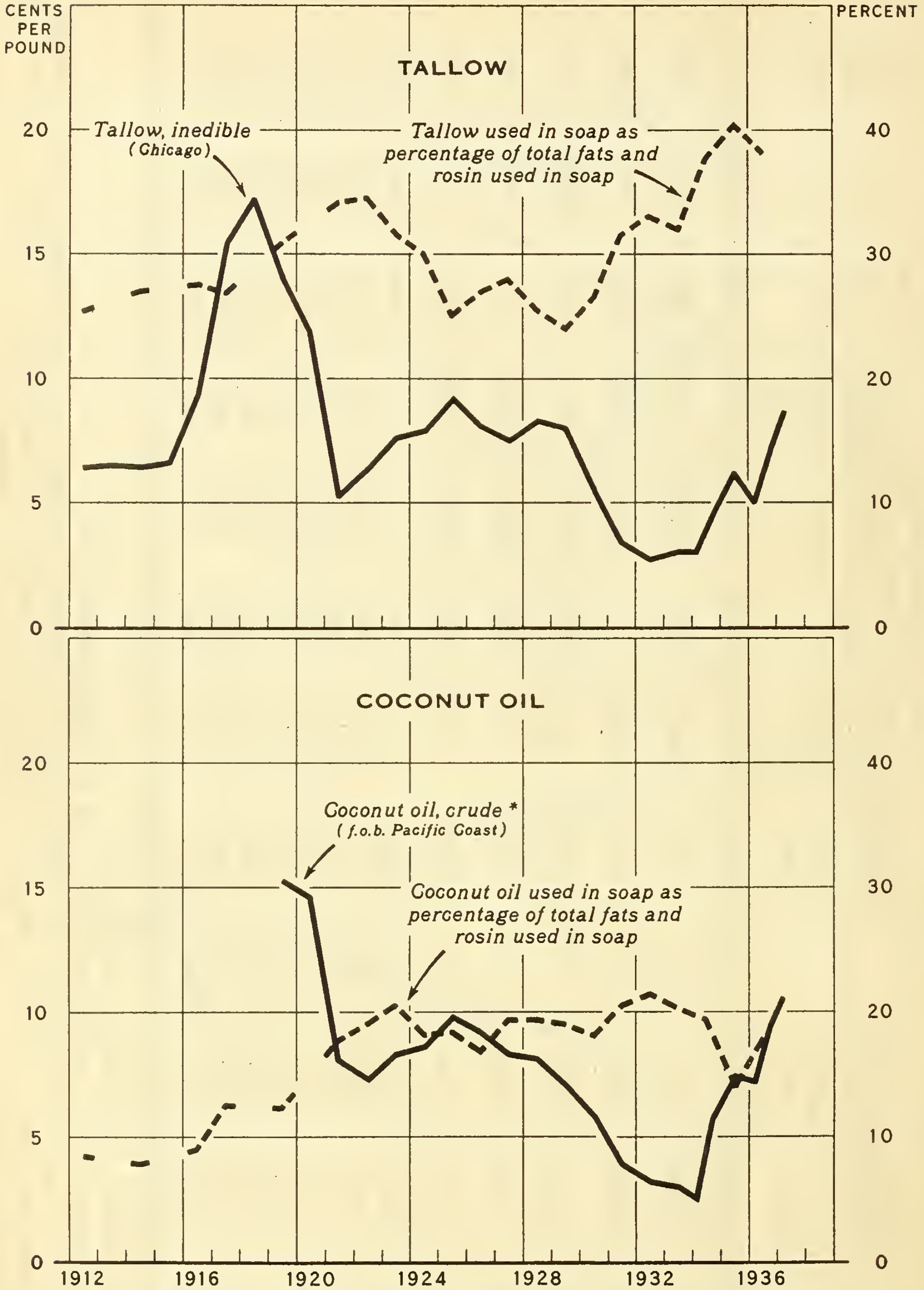
2/ Includes coconut oil, palm-kernel oil, and in 1936 babassu oil.

3/ Includes cottonseed foots and other foots, olive foots and inedible oil, cottonseed, corn, soybean, sesame, sunflower, and rape oils, and negligible amounts of castor, linseed, peanut, perilla, and tung oils.

4/ Year beginning April. 5/ Includes 8,993,000 pounds of babassu oil.

Compiled from U.S.Tariff Commission Report No. 41, 1912-30; Bureau of the Census, Factory Consumption of Animal and Vegetable Fats and Oils by Classes of Products, 1931-36.

PRICES OF TALLOW AND COCONUT OIL, AND AMOUNTS USED IN SOAP AS PERCENTAGES OF TOTAL SAPONIFIABLE MATERIALS USED IN SOAP, 1912 TO DATE



* INCLUDES 3 CENTS TAX ON FIRST DOMESTIC PROCESSING, BEGINNING JUNE 1934

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FIGURE 2

UTILIZATION OF FATS, OILS, AND ROSIN BY THE SOAP INDUSTRY

The following discussion of the classes and characteristics of soap materials and their utilization in soap production has been largely summarized from the U. S. Tariff Commission's "Report to the Congress on Certain Vegetable Oils, Whale Oil, and Copra" (Report No. 41, March 1932, pp.123-148), and from recent issues of such publications as "Industrial and Engineering Chemistry", and "Soap".

The soap industry is by far the largest of the industrial consumers of fats and oils in the United States, using about one and one-half billion pounds annually.

Soap can be made from virtually any animal or vegetable oil, but in practical usage the soap maker limits his choice to oils possessing a fair degree of solubility, lathering, and detergent qualities, that are available in sufficient quantities at a favorable price.

Fats to be used in soap may be classified in three groups having certain technical characteristics such that, whereas substitutions may in general be made within groups fairly readily, extensive substitution between groups results in changes in types of soaps produced.

Fats of the tallow class, that is tallow, palm oil, greases and hydrogenated whale and fish oils, improve the detergent value of soap, make it firm, and yield a slow lathering soap, but reduce solubility. The nut oil class, including coconut, palm-kernel, and babassu oils, give solubility, resulting in quick lathering and, at the same time, hardness. Soft oils, such as foots, cottonseed, soybean, corn, and sesame oils, soften the soap and add solubility. Rosin gives softness and solubility and also acts as a preservative. Thus for soap makers to produce a uniform soap when they wish to vary the fats taken, or the proportions, because of market prices, becomes an intricate problem.

Rosin is readily decomposed with a caustic alkali, such as sodium hydroxide or potassium hydroxide, which combines with the acid to form a soap similar in many respects to the alkali soap made from true oils and fats.

The incorporation of rosin in hard laundry soaps imparts to them the characteristic rosin odor, yellow color and tough waxy texture which tends to overcome and prevent cracking and breaking when processed in cake or bar form. Rosin alone makes an unsatisfactory soft sticky soap but in combination (10-30 percent) with certain oils and fats it improves the lathering power as coconut oil does in white soaps. Rosin cannot be used in the production of chipped, shredded, flaked or powdered soaps. Rosin and coconut oil do not mix well, but both are combined with fats of the tallow group. Tallow group fats are used practically 100 percent in bulk chips and flakes for use in public laundries, and 40 to 75 percent in packaged flakes for household use. Thus the competition is between types of soap and between formulas more often than between just two oils.

Technical improvements and price differences are both factors in substitution and in promoting the use in soap of hitherto little used fats.

If, and when, the cost of hydrogenation becomes low enough and the prices of other oils higher, doubtless many soft oils, now largely barred from use in soap because they produce soft soaps that tend to become rancid, will be utilized by soapers.

The commonest hard fat bases for soap are tallow and coconut oil. Tallow gives soap excellent consistency, but slow solubility for which very hot water is needed. For this reason, most soaps are made of a combination of coconut oil and tallow. This combination possesses the advantages of both: rapid solubility, firm texture, and lasting lather. For general use it is usually preferred to soaps in which either tallow or coconut oil is the only hard ingredient. Many different soft oils are added to these hard oils in varying proportions. Olive oil, used for pure castile soap, is one of the few oils that makes a satisfactory soap without admixture of other oils.

Shifts in utilization

The major shifts since 1904 in types of soap fats consumed are (1) a decline and recovery in the use of animal fats; (2) an increase up to 1916 in the consumption of cottonseed oil in soap, followed by its decline and practical disappearance from the soap kettle; (3) an increase in the percentage contributed by the quick lathering hard oils (coconut and palm-kernel) to the total consumption of saponifiable materials from 11 percent in 1912 to 21 percent in 1923; (4) a pronounced expansion in the consumption of palm oil, from 8 million pounds in 1912 to 192 million in 1930, with a sharp decrease in 1935 and 1936.

Although there was a distinct shift in the proportion of the three major groups of oils used in soap and therefore in types of soap produced as between the pre-war and post-war periods, in the last several years there has been comparatively little variation in these proportions. In 1914, of the total of fats and rosin going into the consumption of soap, 11 percent were of nut oils, 39 percent of the tallow class, and 32 percent of soft oils, and 18 percent rosin.

For the 10 years from 1925 to 1934 the percentage of quick lathering fats remained comparatively stable, averaging 21.5 percent and ranging from a low of 20 percent to a high of 23 percent. The percentage dropped to 16 percent in 1935 (following the imposition of the excise taxes) and returned to 20 percent in 1936 after an excise tax was placed on imported tallows and greases. The 1935 drop was accompanied by an almost corresponding increase in soft oils, the proportion of hard slow lathering fats remaining approximately the same. Variations in the relative quantities of individual oils were much wider on the whole.

Soap production

In the same year (1935) the proportion of white laundry bars to the total quantity of soaps produced fell and the proportion of yellow laundry increased. Only 421 million pounds of white laundry soap were reported by Census of Manufactures for 1935 as compared with 788 million in 1931, whereas production of yellow laundry increased from 643 million pounds in 1931 to 713 million pounds in 1935. Thus the decrease in the use of coconut oil in 1935 was apparently associated almost entirely with this decrease in white laundry bar soap, since production of other types using coconut oil more or less extensively - soap chips and flakes, and toilet soaps - increased between 1931 and 1935, though not so markedly as did yellow laundry soap.

Table 3.- Soap: Materials used in manufacture, classified according to soap making characteristics, 1931-36

Fats and oils, and rosin	Materials used in manufacture						Percentage of saponifiable material					
	1931	1932	1933	1934	1935	1936	1931	1932	1933	1934	1935	1936
	Mil.lb	Mil.lb	Mil.lb	Mil.lb	Mil.lb	Mil.lb	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.
Hard oils:												
Slow lathering -												
Inedible tallow	524	549	509	663	663	660	32	33	32	38	41	38
Whale and fish oils 1/	127	98	97	98	138	161	8	6	6	5	8	9
Greases	129	144	125	143	98	99	8	9	8	8	6	6
Palm oil	172	168	188	155	87	78	10	10	12	9	5	4
Other 2/	5	3	3	2	2	1						
Total	957	962	921	1,060	989	998	58	58	58	60	60	57
Quick lathering -												
Coconut oil	340	354	322	341	230	307	20	22	20	20	14	18
Palm-kernel oil	28	4	6	16	37	26	2		1	1	2	1
Babassu oil						9	-	-	-	-	-	1
Total	368	357	329	358	267	343	22	22	21	21	16	20
Soft oils:												
Cottonseed foots & other foots 3/	152	152	145	141	191	183	9	9	9	8	12	11
Olive foots & inedible oil 3/	41	33	34	32	33	26	3	2	2	2	2	2
Other	23	24	28	24	24	28	1	1	2	1	1	2
Total	217	208	206	197	248	236	13	12	13	11	15	14
Total fats and oils	1,542	1,527	1,456	1,616	1,504	1,573	93	92	92	92	91	91
Rosin	120	131	132	142	139	148	7	8	8	8	9	9
Total saponifiable materials	1,662	1,658	1,588	1,757	1,643	1,726	100	100	100	100	100	100

1/ Hydrogenated. 2/ Percentages for other oils average from .1 to .3 of 1 percent.
3/ Estimated, and includes some miscellaneous materials (as red oil from animal fats).

Compiled as follows:
Fats and oils, Bureau of the Census; foots based on "foots, including loss".
Rosin, Naval Stores Report, Bureau of Chemistry and Soils. Percentages computed from table.

The total production of bar laundry soap, both white and yellow decreased almost as much as production of chips, flakes, and powdered soap increased.

Changes in types of soap used may be due partly to changes in the preference and need of consumers, and partly to advertising undertaken to provide a market for products made from the oils obtainable at the lowest prices.

Table 4.- Soap: Production in the United States, specified years 1/

Year	Bar soap			Powdered soap and chips and flakes
	Toilet	Laundry		
		White	Yellow	
	Mil. lb.	Mil. lb.	Mil. lb.	Mil. lb.
1925		756	675	
1929	324	915	551	725
1931	306	788	643	773
1935 2/	363	421	713	961

1/ Shaving soap, liquid soap, soap powder and scouring powder are omitted in this compilation. 2/ Preliminary.

Compiled from Bureau of the Census, Census of Manufactures.

Comparable figures on the production of soaps by types for 1936 are not available. It may be noted, however, that the consumption of rosin in the manufacture of soap, which increased from an average of 121 million pounds in the 5 years 1929-30 to 1933-34 to 142 million pounds in 1934-35, has continued at a high level with consumption of 139 million pounds in 1935-36 and 149 million in 1936-37. On the other hand, the shift away from quick lathering hard oils to soft oils was not continued in 1936. Coconut, palm-kernel, and babassu formed 20 percent of the soap oils and rosin consumed in 1936, the same proportion as obtained in 1930. It does not seem likely that the trend back to yellow laundry soaps will be of a considerable or permanent nature, even with the relatively higher prices of coconut oil following the imposition of an excise tax of 3 cents per pound, in view of the fact that the previous shift away from yellow soaps was due at least in part to the increased use of rayon and silk materials in women's clothes for the washing of which rosin and cottonseed oil soaps are said to be less suitable than the white soaps.

Table 5.- Soap, laundry: Average wholesale price per pound, 1/ Cincinnati, 1913-1936

Year	Price	Year	Price	Year	Price	Year	Price
	Cents		Cents		Cents		Cents
1913	4.5	1919	10.0	1925	6.0	1931	5.8
1914	4.4	1920	10.5	1926	6.5	1932	5.1
1915	4.4	1921	7.7	1927	6.1	1933	5.6
1916	4.6	1922	5.8	1928	6.3	1934	4.7
1917	6.7	1923	5.8	1929	7.0	1935	5.0
1918	9.0	1924	6.0	1930	6.3	1936	4.8

(See notes on table 6.)

Table 6.- Soap, laundry: Average wholesale price per pound, Cincinnati, by months, 1928-37

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents
1928	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.5	6.8	6.8	6.8	6.3
1929	6.8	7.0	7.0	7.0	7.0	7.0	7.0	6.8	6.8	6.8	7.0	7.0	7.0
1930	7.0	6.8	6.8	6.4	6.1	6.1	6.1	5.8	5.8	5.8	6.1	6.1	6.3
1931	6.1	5.8	5.3	5.8	5.8	5.8	5.8	5.8	5.6	5.6	5.8	5.8	5.8
1932	5.8	5.8	5.3	5.3	5.3	5.3	5.3	4.7	4.7	4.7	4.7	4.7	5.1
1933	4.3	4.3	4.3	4.3	4.8	4.8	4.8	4.8	4.8	4.8	4.5	4.5	4.6
1934	4.2	4.2	4.5	4.5	4.5	4.9	4.9	4.9	4.9	4.9	4.9	5.5	4.7
1935	4.8	4.8	4.8	4.8	5.0	5.2	5.2	5.1	5.1	5.1	5.0	5.0	5.0
1936	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.8	5.0	5.0	5.0	5.4	4.8
1937	5.4	5.6	5.6	5.6	5.4	5.4							

1/ Quoted on basis of 100 - 11 ounce cakes and converted to pound basis, 1915-27. Quoted on pound basis, 1928-37.

Compiled and computed from Bureau of Labor Statistics Wholesale Price Bulletins, and from records of the Bureau of Labor.

Table 7.- Rosin gum, K grade: Average price per pound, New York, by months, 1930-37

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents
1930	3.1	3.1	3.1	3.0	2.7	2.4	2.2	2.0	2.2	2.0	2.0	2.0	2.5
1931	2.0	2.1	2.3	2.3	2.3	2.2	1.7	1.6	1.5	1.5	1.6	1.5	1.9
1932	1.5	1.6	1.6	1.6	1.5	1.5	1.3	1.4	1.7	1.6	1.6	1.6	1.5
1933	1.6	1.5	1.5	1.6	1.7	1.7	1.9	1.8	1.3	1.8	1.8	1.3	1.7
1934	2.0	2.2	2.3	2.3	2.3	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.1
1935	2.2	2.1	2.1	2.0	2.1	2.0	2.0	1.9	2.0	2.1	2.1	2.0	2.0
1936	2.1	2.1	2.1	2.0	2.0	2.2	2.3	2.6	2.6	2.6	3.0	3.8	2.4
1937	4.0	3.9	3.3	3.4	3.4	3.3							

Oil, Paint, and Drug Reporter. Average of quotations for Saturdays during the month. Converted from quotations for barrels of 280 pounds.

Table 8.- Soap: Imports and exports, 1922-36

Year	Imports				Exports			
	Castile	Toilet	All other	Total	Toilet or fancy	Laundry	All other 1/	Total
	1,000 lb	1,000 lb	1,000 lb	1,000 lb	1,000 lb	1,000 lb	1,000 lb	1,000 lb
1922	2,704	2/ 219	2,126	5,049	3/7,566	3/67,080	14,174	88,820
1923	1,862	903	2,572	5,337	7,370	66,498	18,456	92,324
1924	1,740	934	2,198	4,872	5,377	54,276	17,724	77,377
1925	1,823	1,089	2,580	5,492	6,761	55,806	13,098	75,665
1926	2,021	1,219	3,094	6,334	8,975	60,767	13,625	83,367
1927	2,395	1,653	1,977	6,025	8,187	56,229	12,992	77,408
1928	3,403	2,012	1,705	7,120	7,237	47,618	9,022	63,877
1929	3,606	2,039	1,385	7,030	6,586	47,344	20,610	74,540
1930	3,664	1,854	1,504	7,022	5,443	37,866	19,497	62,806
1931	2,754	1,324	1,604	5,682	5,062	28,819	13,372	47,253
1932	1,770	1,252	1,740	4,762	4,618	22,957	7,342	34,917
1933	2,020	483	1,224	3,727	5,990	14,309	6,141	26,440
1934 4/	1,822	421	9,810	5/12,053	5,969	13,096	6,518	25,583
1935	2,038	555	19,849	5/22,442	7,637	12,134	7,350	27,121
1936 6/	1,681	606	1,633	3,920	8,914	11,559	7,404	27,877

1/ Includes powdered or flaked; scouring soaps, pastes, bricks, and scouring powders; shaving soaps, creams, powders, and sticks; medicated and all other soap when reported. Beginning 1929, these data are the total of items separately reported.

2/ September 22 to December 31, 1922.

3/ Not separately reported prior to this date.

4/ Imports for consumption, beginning 1934.

5/ The increase in imports came in between October 1934 and September 1935, the period after the 3 cents per pound excise tax was placed on the major imported soap oils and before the same rate of tax was imposed on "articles . . .manufactured. . .wholly or in chief value from any one or more of the oils subject to. . .tax."

6/ Preliminary.

Foreign Commerce and Navigation of the United States.

Coconut oil

Coconut oil has been imported since 1870, but the volume was very small for many years. The oil was apparently first used entirely in soap making. The first quantitative information on utilization is furnished by the Census of 1910, which reported 51 million pounds of coconut oil and palm-kernel oil used in soap manufacture in 1904, and 89 million pounds in 1909. The Tariff Commission estimates that 73,816,000 pounds of coconut oil were consumed in 1912 by the soap industry. In 1914, use of the oil in oleomargarine appears for the first time (322,000 pounds), and in 1917 its first use in lard compounds is reported as 5,545,000 pounds.

In the past 20 years coconut oil has come to be considered a very important quick lathering soap material, contributing an average of about 20 percent of saponifiable materials used in the manufacture of soap since 1921 except in the year 1935 when it dropped to 14 percent. (See table 3.) Coconut oil does not mix well with rosin, and it is therefore used only in minor proportions in yellow soap.

The high melting point of coconut oil, its low iodine number, its high saponification value, its natural white color and virtual odorlessness, and its slight free fatty acid content---explain its suitability in soap making. Its disadvantages are: (a) its lather is not lasting, and (b) it has an irritating effect on some skins.

There is another factor that needs to be considered in explaining the use of coconut oil in soap. Glycerin is a valuable by-product of soap manufacture, and the quantity of glycerin recoverable from a particular oil is a factor in choosing among oils which may be used for the same purpose. This factor favors coconut oil, as it yields 18 percent of crude glycerin compared with 13-1/2 percent from tallow, 13 percent from cottonseed oil, 12 percent from palm oil, and none from rosin.

World exports of copra and oil, as indicated by available data have remained at a figure very close to 2,100 million pounds for the past 4 years. (See table 10.) Indicated consumption in the United States for the first 6 months of 1937 is about 56 million pounds below the same period of 1936 but its use in oleomargarine has been some 50 million less than in the first half of 1936, and stocks are lower than a year ago. The amount available for use in soap, therefore, has probably been equal to or greater than last year. (See tables 9 and 23). Reports from Schnurmacher in the Philippines indicate expected increased supplies of copra during the remainder of 1937.

Table 9.- Coconut oil, crude: Production, net imports, stocks at end of period, and apparent disappearance, average 1919-22, 1923-28, annual 1929-37

Year	Factory production	Net imports	Stocks, at end of period	Apparent disappearance	Percentage used in soap
	1,000 lb.	1,000 lb.	1,000 lb.	1,000 lb.	Percent
Average					
1919-22	161,370	183,322	121,192	348,382	
1923-28	248,071	221,839	117,003	470,608	
1929	352,654	381,108	193,543	657,222	
1930	352,727	291,048	182,243	655,075	
1931	303,434	305,834	204,093	587,418	58
1932	264,079	221,893	136,194	553,871	64
1933	351,075	286,472	199,383	574,358	56
1934 1/	297,277	289,682	189,227	597,115	57
1935	252,841	341,078	153,455	629,691	36
1936 - 2/					
Jan.-Mar.	70,188	79,291	148,355	154,579	
Apr.-June	72,049	81,302	146,985	154,721	
July-Sept.	63,004	60,128	91,380	178,737	
Oct.-Dec.	53,142	83,599	75,873	152,248	
Total	258,383	304,320		640,286	48
1937 - 2/					
Jan.-Mar.	61,945	76,486	75,665	138,658	
Apr.-June	56,353	90,925	109,019	113,924	

1/ Imports for consumption, beginning January 1934.
2/ Preliminary.

Compiled as follows:
Factory production and stocks, Bureau of the Census, Animal and Vegetable Fats and Oils: production is crude, stocks are crude plus refined converted to crude (using 0.94).
Trade figures, Foreign Commerce and Navigation of the United States.
Apparent disappearance computed from table.

Table 10.-Copra in terms of coconut oil, and coconut oil: Net exports, principal producing countries, 1931-36

Country	1931	1932	1933	1934	1935	1936 1/
	Mil. lb.	Mil. lb.	Mil. lb.	Mil. lb.	Mil. lb.	Mil. lb.
COPRA IN TERMS OF COCONUT OIL, AND COCONUT OIL:						
Asia-						
Philippine Islands	605	443	781	795	715	756
Netherland India	498	694	691	571	678	718
British Malaya	164	164	195	192	238	212
Ceylon	240	179	210	305	191	150
Total	1,507	1,480	1,877	1,863	1,822	1,836
COPRA IN TERMS OF COCONUT OIL:						
Australasia-						
New Guinea 2/	(84)	84	83	88	79	
Samoa, West	16	15	16	13	18	
Oceania						
Fiji Islands	24	21	32	33	37	
Solomon Islands 3/	30	31	30	26	(30)	
Tonga Islands	13	12	16	14	17	
New Hebrides	(10)	10	10	10	14	
Gilbert & Ellice Is.	9	9	13	5	10	
Africa						
Mozambique	30	34	42	45	47	
Zanzibar	17	17	17	18	17	
Tanganyika	10	10	12	8	6	
North America						
Trinidad & Tobago	11	9	11	10	5	
Other countries 4/	1	22	20	19	7	
Grand total	1,762	1,754	2,179	2,152	2,109	

1/ Preliminary. 2/ Year ended June 30. 3/ Year beginning April.
4/ Includes French Indo-China, Siam, Seychelles, and British Guiana.

Compiled from official sources and the International Yearbook of Agricultural Statistics.

Figures in parentheses are interpolated.

Table 11.-Copra: Imports into the United States from the Philippine Islands and other sources, reexports and net imports, average 1919-22, 1923-28, annual 1929-37

Year	Imports			Reexports	Net imports
	From Philippine Islands	From other sources	Total		
	1,000 lb.	1,000 lb.	1,000 lb.	1,000 lb.	1,000 lb.
Average					
1919-22	78,750	154,345	233,095	6,408	226,687
1923-28	295,251	104,532	399,783	3,862	395,921
1929	310,194	260,737	570,931	4,692	566,240
1930	336,555	258,784	595,339	6,690	588,649
1931	267,471	190,476	457,947	26,890	431,056
1932	198,526	254,921	453,447	9,567	443,881
1933	442,168	218,704	660,872	8,917	651,955
1934 1/	338,087	61,147	399,234		399,234
1935	441,066	13,068	454,134		454,134
1936 2/					
Jan.-Mar.	104,167	1,401	105,568		105,568
Apr.-June	79,789	1,238	81,027		81,027
July-Sept.	111,853	2,423	114,276		114,276
Oct.-Dec.	60,949	1,665	62,614		62,614
Total 1936	356,758	6,727	363,485		363,485
1937 2/					
Jan.-Mar.	121,864	10,251	132,115		132,115
Apr.-June	68,272	28,507	96,779		96,779

1/ Imports for consumption, beginning January 1934; reexports not considered.
2/ Preliminary.

Foreign Commerce and Navigation of the United States and Monthly Summary of Foreign Commerce.

Table 12.-Coconut oil: Imports into the United States from the Philippine Islands and other sources, exports and net imports, average 1919-22, 1923-28, annual 1929-37

Year	Imports			Exports	Reexports	Net imports
	From Philippine Islands	From other sources	Total			
	1,000 lb.	1,000 lb.	1,000 lb.	1,000 lb.	1,000 lb.	1,000 lb.
Average						
1919-22	185,653	42,954	228,607	1/ 41,194	4,090	183,322
1923-28	244,495	402	244,897	18,908	4,150	221,839
1929	411,936	43	411,979	29,532	1,339	381,108
1930	317,919	33	317,952	25,107	1,797	291,048
1931	325,175	5	325,180	18,266	1,080	305,834
1932	249,117	26	249,143	23,684	3,566	221,893
1933	316,078	25	316,103	26,221	3,410	286,472
1934 2/	314,803	2	314,805	25,123		289,682
1935	353,396	10	353,406	12,328		341,078
1936 3/						
Jan.-Mar.	84,012	2	84,014	4,723		79,291
Apr.-June	88,843	5	88,848	7,546		81,302
July-Sept.	63,797	7	63,804	3,676		60,128
Oct.-Dec.	85,398	1	85,399	1,800		83,599
Total 1936	322,050	15	322,065	17,745		304,320
1937 3/						
Jan.-Mar.	78,459	26	78,485	1,999		76,486
Apr.-June	93,067	5	93,072	2,147		90,925

1/ Includes 6 months only for 1919.
2/ Imports for consumption, beginning January 1934; reexports not considered.
3/ Preliminary.

Foreign Commerce and Navigation of the United States and Monthly Summary of Foreign Commerce. Crude and refined in terms of crude.

Table 13.- Coconut oil, crude: Average price per pound, in tanks, f.o.b. Pacific Coast ports and mills, by months, 1930-37

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents
1930	6.8	6.6	6.4	6.3	6.3	6.1	6.0	5.9	5.8	5.0	5.1	5.1	5.9
1931	4.8	4.5	4.5	4.6	4.2	3.8	4.0	3.6	3.3	3.2	3.5	3.4	3.9
1932	3.3	3.5	3.6	3.2	3.0	3.0	3.2	3.4	3.3	3.1	3.0	2.9	3.2
1933	3.0	2.8	2.9	2.8	3.2	3.2	3.1	3.1	3.0	2.8	2.8	2.7	3.0
1934	2.6	2.6	2.5	2.4	2.4	1/5.3	5.2	5.4	5.6	6.0	5.9	6.3	2/
1935	7.2	7.9	8.6	8.0	7.9	7.3	6.3	6.4	6.3	7.5n	7.3	7.2	7.4
1936	7.6	7.5	7.2	7.2	6.8	6.9	7.3	7.6	8.5	9.2	9.4	11.1n	8.0
1937	12.0n	11.2n	11.6n	10.9	9.3	8.6							

1/ In this tabulation the 3 cents per pound excise tax on first domestic processing imposed by the Revenue Act of 1934 has been added to the price as quoted, beginning June 1934.

2/ Average, January - May, without tax 2.5 cents; June - December, including tax 5.7 cents.

Compiled from the Oil, Paint, and Drug Reporter. Average of quotations for Saturdays during the month.

Palm-kernel oil

Palm-kernel oil is a near equivalent of coconut oil and is apparently almost completely interchangeable with it in soaps. World exports of kernels in terms of oil equivalent have increased from 527 million pounds in 1931 to 820 million pounds in 1936. (See table 15.)

Imports into the United States of palm-kernel oil and kernels in terms of oil equivalent have amounted to more than 100 million pounds in the first 6 months of 1937 compared with 32 million pounds in the whole of 1936. Supplies for continued imports seem to be available.

Table 14.- Palm-kernel oil and palm kernels: Imports, stocks at end of period, and apparent disappearance, average 1918-22, 1923-28, annual 1929-37

Year	Net imports of palm-kernel oil 1/			Imports of palm kernels		Stocks at end of period	Apparent disappearance	Percentage used in soap
	Edible	Inedible	Total	Kernels 2/	Oil equivalent (45 percent)			
	1,000 lb.	1,000 lb.	1,000 lb.	1,000 lb.	1,000 lb.	1,000 lb.	1,000 lb.	Percent
Average								
1918-22			1,514	6,254	2,815	1,524	4,167	
1923-28			38,641	250	112	17,252	36,132	
1929			69,909	108	49	14,858	72,352	
1930	9,867	29,104	38,971	15,423	6,940	16,111	44,658	
1931	10,065	12,928	22,993	34,816	15,667	9,805	44,966	62
1932	1,862	249	2,111	28,700	12,915	7,264	17,567	20
1933	58	12,899	12,957	14,918	6,713	12,034	14,900	42
1934	952	11,800	12,752	8,509	3,329	4,361	24,254	68
1935	7,978	50,592	58,570	50,073	22,533	30,261	55.203	67
1936 - 3/								
Jan.-Mar.	1,899	1,991	3,890	0	0	20,466	13,685	
Apr.-June	1,875	84	1,959	4,316	1,942	12,800	11,567	
July-Sept.	3,510	1,487	4,997	8,425	3,791	11,490	10,098	
Oct.-Dec.	334	8,961	9,295	14,702	6,616	12,583	14,818	
Total 1936	7,618	12,523	20,141	27,443	12,349		50,168	53
1937 - 3/								
Jan.-Mar.	3,329	21,312	24,641	18,270	8,221	18,251	27,194	
Apr.-June	7,784	52,120	59,904	23,106	10,398	41,048	47,505	

1/ Imports for consumption 1923, and beginning 1930, except 1932 which are general imports.

2/ Imports for consumption 1922-31, and beginning 1934.

3/ Preliminary.

Stocks are crude and refined in terms of crude (using 0.93).
Apparent disappearance computed from table.

Net imports of oil are added to oil equivalent of imported kernels to compute disappearance.

Table 15.- Palm kernels in terms of palm-kernel oil, and palm oil: Exports from principal producting countries, 1931-36

Country	1931	1932	1933	1934	1935	1936 1/
PALM KERNELS IN TERMS OF PALM-KERNEL OIL						
	Mil. lb.	Mil. lb.	Mil. lb.	Mil. lb.	Mil. lb.	Mil. lb.
Africa -						
British West	314	395	328	362	400	485
French West	109	127	105	133	139	166
Belgian Congo	47	57	62	49	64	67
Portuguese West	17	18	19	17	18	18
Anglo-Egyptian Sudan	5	3	7	8	9	8
Other Africa	8	7	7	4	5	(5)
Total Africa	500	607	528	573	635	749
Asia -						
Netherland India	12	18	23	25	30	37
British Malaya	1	1	2	3	4	5
South America -						
Brazil	14	9	1	2/	10	31
Grand total	527	635	554	601	679	821
PALM OIL						
Africa						
British West	268	265	292	257	326	372
Belgian Congo	81	85	116	99	125	134
French West	62	51	52	56	90	102
Portuguese West	10	9	9	9	4	(8)
Other Africa	5	5	4	2	3	(4)
Total Africa	426	415	473	423	548	620
Asia -						
Netherland India	135	187	256	267	316	381
British Malaya	10	18	28	36	55	66
Grand total	571	620	757	726	919	1,067

1/ Preliminary.
2/ Less than 500,000 pounds.

Compiled from official sources, International Yearbook of Agricultural Statistics, and H. M. F. Faure and Company. Figures in parentheses are interpolated.

Table 16.- Palm-kernel oil, denatured: Average price per pound, New York, by months, 1931-37

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents
1931	6.2	6.1	6.1	6.2	5.8	5.0	5.0	5.1	5.2	5.4	5.4	5.5	5.6
1932	5.5	5.5	5.4	4.9	4.6	4.6	4.6	4.6	4.6	1/4.5	4.5	4.5	4.8
1933	4.2	4.2	4.4	4.5	4.8	4.7	4.2	4.0	4.0	3.9	4.1	4.2	4.3
1934	4.2	4.2	4.2	3.9	2/6.5	6.4	6.2	6.2	6.2	3/5.8	5.3	6.0	
1935	7.2	7.6	8.4	7.7	7.7	7.4	7.1	6.9	6.9	7.8	7.6	7.6	7.5
1936	7.6	7.8	7.7	7.9	7.9	7.9	7.2	7.8	8.0	8.4	8.6	10.6	8.1
1937	11.5	10.4	10.4	10.1	9.0	8.8							

1/ Reported as nominal, October 1932 - September 1934; February - July 1935; October 1935 - September 1936, and December 1936.

2/ In this tabulation the 3 cents per pound excise tax on first domestic processing imposed by the Revenue Act of 1934 has been added to the price as quoted, beginning May 1934.

3/ Beginning October 1934, quoted as bulk shipments, prior to that time in barrels.

Oil, Paint, and Drug Reporter. Average of quotations for Saturdays during the month.

Babassu oil

Babassu oil is similar to coconut and palm-kernel oils in its high lauric acid content and apparently has a high degree of interchangeability with those oils in soap making and in oleomargarine. Oil equivalent of imported nuts amounted to about 35 million pounds in 1936, the first year for which data are available. During the first half of 1937 oil equivalent of imports amounts to almost 27 million pounds.

Table 17.- Babassu nuts: Imports, 1936-37

Year	Nuts	Oil equivalent (63 percent)	Percentage used in soap
	1,000 lb.	1,000 lb.	Percent
1936 -			
Jan.-June	36,937	23,270	
July-Dec.	18,991	11,964	
Total	55,928	35,235	25
1937 -			
Jan.-June	42,073	26,507	

Foreign Commerce and Navigation of the United States.

Tallow

Tallow production for the first 6 months of 1937 is estimated at 332 million pounds compared with 266 million pounds in the same period in 1936, but consumption also has been running higher this year, amounting to 403 million pounds as against 327 million in the first 6 months of 1936. Stocks are therefore almost 90 million pounds lower than at the end of June 1936. (See table 18.) Production is expected to be lower during the last half of 1937 than it was last year as fewer cattle will be slaughtered, but even if tallow production drops as much as 15 percent below production in the last half of 1936, total production for 1937 will still be slightly above production last year.

Imports rose from practically zero in 1933 to 246 million pounds in 1935. Production in 1935, however, was the lowest estimated since 1921, and production plus the large imports totaled less than production in 1934. Imports began to drop off markedly in March 1936. In the two months July and August of 1936 imports amounted to 36 million pounds just getting in in time to avoid the tax.

Imports have been negligible since the imposition of the excise tax in August 1936, which placed a tax of 3 cents per pound on all imports in addition to the duty of one-half cent per pound. Imports since that date have amounted to a total of only about 5 million pounds.

Table 18.- Tallow, inedible: Apparent production, net imports, stocks at end of period, and consumption, average 1921-25, 1926-29, annual 1930-37

Year	Apparent production 1/	Net imports	Stocks, at end of period	Factory consumption	Percentage used in soap
	1,000 lb.	1,000 lb.	1,000 lb.	1,000 lb.	Percent
Average					
1921-25	481,004	2/-21,684	51,860	464,773	
1926-29	532,256	8,327	99,580	528,652	
1930	570,942	2/- 5,003	140,909	524,610	
1931	587,418	1,365	163,364	566,328	93
1932	607,772	502	185,742	585,896	94
1933	636,675	239	255,925	566,731	90
1934	745,114	42,813	326,484	717,368	92
1935	441,682	245,851	295,660	718,357	92
1936 - 3/					
Jan.-Mar.	122,192	23,386	291,372	149,866	
Apr.-June	143,595	5,627	264,706	175,888	
July-Sept.	148,750	35,399	245,885	202,970	
Oct.-Dec.	193,691	1,712	244,037	197,251	
Total 1936	608,227	66,124		725,974	91
1937 - 3/					
Jan.-Mar.	168,943	579	195,268	218,291	
Apr.-June	163,505	2,422	176,266	184,929	

1/ Estimates of apparent production are computed by the Bureau of Agricultural Economics. Figures are based on factory consumption, trade, and corrected for changes in stocks, because factory production figures do not include considerable quantities produced on farms and by small local butcheries and meat markets.

2/ Net exports.

3/ Preliminary.

Compiled as follows:

Trade figures, Foreign Commerce and Navigation of the United States.

Factory consumption and stocks, Bureau of the Census, Animal and Vegetable Fats and Oils.

Table 19.- Tallow, inedible: Average wholesale price per pound, Chicago, by months, 1910-37

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents
1910	6.97	6.91	7.28	7.47	7.09	6.99	7.09	7.25	7.61	7.61	7.69	7.12	7.26
1911	7.25	6.97	6.52	5.80	5.84	5.75	5.77	6.12	6.76	6.32	6.66	6.16	6.35
1912	6.16	6.11	6.12	6.60	6.55	6.44	6.33	6.39	6.44	6.56	6.32	6.41	6.37
1913	6.26	6.38	6.38	6.44	6.14	6.19	6.32	6.81	6.88	6.70	6.75	6.83	6.51
1914	6.69	6.62	6.62	6.50	6.47	6.38	6.25	6.19	6.56	6.16	6.27	6.32	6.42
1915	6.36	6.50	6.42	6.50	6.38	6.06	6.06	6.06	5.92	7.12	7.56	8.25	6.60
1916	8.62	8.69	9.01	9.98	10.21	9.38	8.52	7.80	9.06	9.91	10.92	11.06	9.43
1917	11.14	11.44	12.40	14.14	17.41	17.44	16.19	16.27	16.88	16.75	17.03	17.50	15.38
1918	17.12	17.00	17.12	16.94	16.72	16.44	17.28	17.88	18.31	19.00	18.12	14.06	17.17
1919	10.28	9.06	9.38	12.12	13.81	14.62	18.92	17.28	15.47	16.88	15.24	15.13	14.02
1920	16.84	15.03	14.85	14.50	13.28	10.90	11.03	11.19	11.40	9.50	7.06	5.58	11.76
1921	5.84	5.38	4.90	4.53	5.09	4.35	4.31	5.25	6.16	6.25	5.98	5.69	5.31
1922	5.75	6.00	6.35	6.25	6.15	6.00	5.94	6.18	6.38	6.69	7.48	7.62	6.40
1923	8.58	8.62	9.28	8.72	7.68	6.54	6.20	6.52	7.56	7.32	7.41	7.28	7.64
1924	7.61	7.56	7.44	7.12	6.97	6.50	7.22	8.25	8.12	8.73	9.28	9.82	7.89
1925	9.94	9.00	9.36	9.02	8.62	8.88	9.38	9.50	9.38	9.31	9.25	9.28	9.24
1926	9.38	9.22	9.06	8.18	8.23	8.56	8.08	7.72	7.88	7.44	7.06	6.45	8.10
1927	6.89	7.44	7.40	7.12	7.28	7.35	7.34	7.41	8.06	8.00	8.07	7.88	7.52
1928	8.30	7.87	8.12	8.39	8.33	7.88	7.88	7.90	8.44	8.62	8.81	8.93	8.29
1929	8.89	9.03	8.53	8.10	7.66	7.32	7.44	7.85	7.95	7.90	7.72	7.32	7.97
1930	7.12	6.64	6.31	6.33	5.72	5.16	5.18	5.41	5.17	4.64	4.54	4.75	5.53
1931	3.94	3.53	3.84	3.95	3.44	3.15	3.07	2.80	2.80	3.28	3.52	3.17	3.37
1932	2.87	2.82	2.57	2.44	2.31	1.96	2.47	3.10	3.14	2.76	2.55	2.28	2.71
1933	2.35	2.28	2.40	2.54	3.65	3.75	3.66	3.44	3.12	3.02	2.92	2.82	3.00
1934	2.73	2.92	3.06	3.17	3.49	3.34	3.78	4.35	4.65	4.74	4.56	4.73	3.79
1935	5.79	6.22	6.61	6.36	6.74	6.36	5.65	5.88	6.23	6.62	6.18	6.00	6.22
1936	5.74	5.62	5.02	4.81	4.00	4.67	5.64	6.03	6.71	6.53	7.22	7.84	5.82
1937	8.79	8.83	8.90	8.62	8.22	8.22	8.22						

Compiled from the National Provisioner. Average of weekly quotations during the month.

Palm oil

Palm oil is a member of the tallow group, i.e., the slow lathering, hard fat group of soap oils. World exports of palm oil have increased from 570 million pounds in 1931 to over a billion pounds in 1936. From Africa the increased exports have amounted to more than 45 percent, while exports from Netherland India and British Malaya have increased by 200 percent in the same period (see table 15), and are expected to continue to increase.

Imports into the United States in 1936 were more than double imports in 1934 and imports for the year 1937 promise to be still larger as imports in the first half exceeded imports during the first 6 months of 1936 by more than 6 percent.

From 1931 to 1934, an average of almost 75 percent of palm oil consumption in the United States went into soap, but the imposition of the excise tax in May 1934 and the shortage of food oils in the United States permitted palm oil to enter the shortening industry. And in 1935 and 1936 only about half as much palm oil was used in soap as in the preceding 4 years, and 50 percent of consumption went into shortenings.

Table 20.- Palm oil, crude: Net imports, stocks at end of period, and apparent disappearance, average 1917-22, 1923-28, annual 1929-37

Year	Net imports 1/	Stocks, at end of period	Apparent disappearance	Percentage used in soap
	1,000 lb.	1,000 lb.	1,000 lb.	Percent
Average				
1917-22	36,360	15,766	35,068	
1923-28	135,424	21,740	134,428	
1929	259,165	52,576	228,329	
1930	286,514	93,820	245,270	
1931	256,187	89,074	260,933	66
1932	214,634	80,335	223,373	75
1933	282,767	105,794	257,308	73
1934	155,531	76,969	184,356	84
1935	297,579	69,528	305,020	29
1936 2/				
Jan.-Mar.	92,931	89,084	73,375	
Apr.-June	72,897	92,535	69,446	
July-Sept.	80,781	85,687	87,629	
Oct.-Dec.	92,180	93,795	84,072	
Total 1936	338,789		314,522	25
1937 2/				
Jan.-Mar.	81,555	101,687	73,663	
Apr.-June	95,189	117,154	79,722	

1/ Imports minus negligible reexports (which include very small quantity of palm-kernel oil), 1930-33; imports for consumption, beginning January 1934. Edible and inedible imports not separately reported.

2/ Preliminary.

Table 21.- Palm oil, crude: Average price per pound, in casks, New York, by months, 1930-37

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents
1930	7.6	7.4	7.3	7.2	6.8	6.0	6.0	6.4	5.7	5.8	5.8	5.8	6.5
1931	5.2	5.1	5.1	5.1	4.8	4.7	4.9	4.9	4.6	4.1	4.3	4.4	4.8
1932	4.2	3.9	3.9	3.8	3.8	3.6	3.4	3.5	3.9	3.9	3.8	3.5	3.8
1933	3.1	2.9	3.2	3.2	3.7	4.3	4.5	4.6	4.5	4.0	4.1	4.0	3.8
1934	3.9	3.7	3.8	3.9	1/6.4	6.2	6.1	6.2	6.4	6.4	6.3	6.4	2/
1935	7.2	7.8	8.7	8.0	7.6	7.7	7.4	7.4	7.5	7.9	7.9	7.4	7.7
1936	7.6	7.9	7.7	7.6	7.4	7.2	7.4	7.7	8.0	7.9	8.2	9.1	7.8
1937	9.8n	9.9n	9.6	10.0	9.0	9.0							

1/ In this tabulation the 3 cents per pound excise tax on first domestic processing imposed by the Revenue Act of 1934 has been added to the price as quoted, beginning May 1934.

2/ Average, January - April, without tax 3.8 cents; May - December, including tax 6.3 cents.

Oil, Paint, and Drug Reporter. Average of quotations for Saturdays during the month. Quoted as Lagos through April 1934; beginning May 1934 as Niger.

Marine animal oils and greases

The new season for fish oil production is just opening. Domestic production has increased steadily in the past 6 years, mounting from 64 million pounds in 1931 to 267 million pounds in 1936, and in the same period utilization in soap has increased from 58 million to 128 million pounds.

More whale oil than fish oil was used in soap in 1931, namely, 69 million pounds, but utilization in soap dropped to 28 million pounds in 1935, just after the tax was imposed. In the past most of the whale oil consumed in the United States has been imported.

The industry of producing whale oil is carried on in gigantic floating factories that can work independently of any land station. Thus production of any country does not mean production from that country's nearby waters but production of whalers operating under the flag of that country. Domestic production, that is production under the American flag, rose from 4 million in 1933 to 31 million pounds in 1936.

Prospects for the 1937-38 season are that considerably more whaling will be carried on under the American flag than in recent years. If the season is a good one "domestic production" may be greatly increased.

Table 22.-Production of grease, fish and whale oils, and imports of whale oil, 1931-37

Year	Production			Whale oil, imports for consumption
	Grease	Fish oils 1/	Whale oil	
	Mil. lb.	Mil. lb.	Mil. lb.	Mil. lb.
1931	364	64	2/	81
1932	313	85	6	42
1933	328	129	4	43
1934	343	216	8	16
1935	259	229	9	20
1936-				
Jan.-June	143	57	4	14
July-Dec.	165	210	27	14
Total	308	267	31	28
1937-				
Jan.-June	154	35	6	34

1/ Other than fish-liver oils.
2/ Less than 500,000 pounds.

Compiled from Bureau of the Census, Animal and Vegetable Fats and Oils, and Bureau of Fisheries, Canned Fishery Products and By-products of the United States and Alaska.

Cottonseed oil and foots

The Crop Reporting Board reports as of August 1, 1937, indications of a total yield of 15.6 million bales, which means a possible oil production of between 1,500 and 1,600 million pounds of cottonseed oil. In the early years of the production of cottonseed oil it was probably used mainly in soap. It has been estimated that in 1916, 195 million pounds of cottonseed oil, or about 14 percent of total production was used in soap, contributing 16 percent of all the saponifiable materials used. Tallow contribute almost 28 percent, rosin 14 percent, and coconut oil only 9 percent. The average price for that year of crude cottonseed oil, Southeastern mills, was 9.34 cents per pound, the average for inedible tallow at Chicago was 9.43 cents per pound, and for crude coconut oil over 12 cents. Immediately after this period the use of cottonseed oil in soap dropped very sharply and practically disappeared from soap by 1922, except for very small quantities usually of damaged or off grades.

Cottonseed oil makes a somewhat softer soap than tallow, coconut, palm-kernel or palm oils, but one having greater solubility and better lathering qualities than soap made from any of the major oils except coconut and palm-kernel. Its lather is quick, abundant, thick, and fairly lasting - much more lasting than that of coconut oil soap. Cottonseed oil has a tendency toward rancidity which, however, does not bar its use in white laundry soaps in which the larger admixture of sodium silicate acts as a preservative. Change in its economic position rather than unsuitability for soap making is the principal cause of the decline of its use in soap.

Foots, however, contribute a goodly percentage and the prospective large cotton crop will not be without its effect on the total supply of soap materials. In June and July 1937 crude cottonseed oil at Southeastern mills was nominally quoted at 8.2 and 8.0 cents per pound, slightly lower than prime inedible tallow at Chicago which averaged 8.2 cents per pound during both months, and crude coconut oil which averaged 8.6 cents in June and 8.1 in July.

Soybean oil in soap

There appears to be a wide difference of opinion regarding the desirability of soybean oil as a soap material. In 1912 only 1 million pounds was used in soap, while in 1917, 124 million pounds were so used. But, as in the case of cottonseed oil, its use in soap almost disappeared by 1922, not more than 5 or 6 million pounds having been used in any single year since.

Soaps containing soybean oil seem to withstand hard water very well without impairment of their lathering capacity. It is somewhat difficult to saponify soybean oil and its incomplete saponification will produce a kind of soap which is susceptible to deterioration, will show yellow spots and will emit a disagreeable odor. These defects seem to be overcome by mixing soybean oil with tallow, coconut oil, rosin, etc.

Olive oil and olive oil foots

Olive oil is one of the few oils which used alone makes a good soap, but its price prohibits its extensive use in soaps. Olive foots and sulphured olive oil represent about 3 percent of the total fat and rosin materials used in soap. A few years ago it was discovered that teaseed oil could be substituted for olive oil without detection since which time it has been used in place of olive oil in some soaps and in combination with it in others.

Other oils sometimes used in soap

Price is usually more important than technical qualities in determining the amount of consumption in soap of several other oils.

Corn, sesame, sunflower, rape, castor, linseed, peanut, perilla, and tung oil and other refining foots are all used in varying small quantities. Technically corn and sesame oils have about the same soap-making qualities as cottonseed oil. Peanut oil is said to be a good soap-making oil, making a harder and slower lathering soap than olive oil.

Little known soap oils

Soap makers throughout the world are searching for new soap oils. It is reported that a Japanese company has made arrangements for the manufacture of oil from rice bran, the oil to be used as a raw material for soap making.

A German process (Patent No. 626,787) produces fatty acids from paraffine obtained in distillation of brown coal tar. The fatty acid lends itself to saponification with alkali, producing a serviceable soap. It is not known how much of the new commodity is being manufactured, but Germany possesses large resources of brown coal, and soap labeled as being made from coal is on the market in Germany.

A recent review in a trade magazine says "Among the oils which have appeared on the market in recent months with varying capacities for replacing coconut oil are ouricuri, tucum, and murumuru oils, ucuhuba butter, and jaboty tallow. Although none of these fats are available in any way resembling a steady supply now, there always exists the possibility that if they are tried out and found valuable and if a demand for them is built up interest may be developed and means found for organizing an industry to produce them. At any rate, there are no limits to what may be expected for the future regardless of how long the development takes. Most of these materials are available in great abundance in Central and South America".

Non-soap detergents

The Tariff Commission (Report No. 41) comments on non-soap detergents and non-detergents materials as follows: Data are not available showing the amount of non-soap detergents, such as sodium silicate, that may be contained in laundry soaps and some toilet soaps. Sodium silicate is a water softener and acts to retard the development of rancidity in soap. These ingredients sometimes form a substantial part of the weight of laundry soaps and they form a major proportion of the weight of scouring or soap powder. In 1919 it is reported that 99 million pounds of sodium silicate were used in soap, or between 10 and 11 percent of the weight of saponifiable materials used. In white laundry soap the silicate content may be as high as 30 to 40 percent of the weight. It is used in yellow laundry soap in much smaller proportions.

Non-detergent materials

Non-detergent materials sometimes found as admixtures of soap are (1) free alkali; (2) inert fillers, such as talc, china clay, chalk, and starch; (3) perfumes; (4) emollients; (5) antiseptics. Water in fairly large quantities is found in all soaps and air is enclosed in floating soaps.

Table 23.-Oleomargarine: Production and materials used in manufacture, United States, total January-June, monthly May-June, 1936 and 1937

Item	1936 1/			1937 1/		
	Total Jan.-June	May	June	Total Jan.-June	May	June
	1,000 lb.	1,000 lb.	1,000 lb.	1,000 lb.	1,000 lb.	1,000 lb.
Oleo oil	8,057	1,114	1,451	7,766	1,122	1,060
Oleostearine	1,836	321	290	1,538	275	260
Lard, neutral	1,154	139	142	966	151	122
Oleo stock	927	121	121	823	115	125
Total animal	11,974	1,695	2,004	11,093	1,663	1,567
Cottonseed oil	50,702	7,361	6,649	79,614	12,557	10,961
Soybean oil	2,513	300	955	15,094	1,490	1,581
Peanut oil	2,043	170	220	1,634	194	183
Corn oil	798	226	177	887	118	201
Total domestic veg.	56,056	8,057	8,001	97,229	14,359	12,926
Coconut oil	80,392	9,979	9,736	31,301	4,094	5,614
Babassu oil	9,570	1,035	1,182	10,646	2,617	1,794
Palm-kernel oil	638	216	308	4,327	834	866
Palm oil	746	71	224	953	157	89
Sesame oil	35	1	5	1	---	---
Total foreign veg.	2/ 91,395	11,302	11,455	47,228	7,702	8,363
Total fats and oils	159,425	21,054	21,460	155,550	23,724	22,856
Milk	38,652	5,029	5,521	34,636	5,244	5,102
Salt and other miscl.	10,704	1,403	1,392	8,863	1,346	1,333
Production of oleomargarine	192,904	25,580	25,834	188,623	28,741	27,945

1/ Preliminary. 2/ Includes 9,000 pounds of rape oil.
Compiled and computed from reports of the Commissioner of Internal Revenue.

Production of oleomargarine for the first half of 1937 is still under production in the same period of 1936, although for the 2 months May and June 1937 production exceeded by 5 million pounds production in May and June of 1936.

Table 24.- Price per pound of selected fats and oils, average January-July, monthly June and July, 1936 and 1937

Fat or oil	1936			1937		
	Average Jan. to July	June	July	Average Jan. to July	June	July
	Cents	Cents	Cents	Cents	Cents	Cents
Butter, 92°, N. Y.	32.2	29.7	33.6	33.1	30.9	31.6
Oleomargarine, nut, Chicago	11.4	11.0	11.2	14.0	12.9	12.5
Lard, prime steam, Chicago	10.8	10.3	11.0	12.3	11.9	12.2
Lard, refined, Chicago	11.8	11.3	12.1	13.3	13.2	13.6
Lard compounds, Chicago	11.8	11.2	12.0	13.5	13.4	13.2
Coconut oil, edible, N. Y.	6.5	6.1	6.2	9.9	8.1	7.6
Cottonseed oil, crude, f.o.b. S. E. mills	8.3	8.1	8.7	9.3	8.2n	8.0n
Cottonseed oil, p.s.y., N. Y.	9.5	9.1	9.8	1/10.8	10.0	
Soybean oil, refined, N. Y.	9.4	8.6	10.0	12.0	11.4	11.3
Peanut oil, domestic, refined, N.Y.	12.5	12.2	12.5	13.2n	12.8n	12.2n
Rape oil, refined, N. Y.	7.4	7.3	8.5	12.1	12.7	12.8
Oleo oil, No. 1, N. Y.	11.0	9.2	9.4	13.3	12.8	13.0
Oleostearine, barrels, N. Y.	8.3	7.3	9.0	10.2	9.5	9.7
Corn oil, refined, N. Y.	11.5	10.9	11.8	12.4	12.0	10.9
Olive oil, edible, N. Y.	22.9	22.7	22.7	31.9n	32.0n	32.0n
Sunflower oil, refined, N. Y.	10.0	9.8	9.9	2/12.4	-	-
Teaseed oil, crude, N. Y.	9.1	8.9	9.4	11.8	9.6	9.4
Coconut oil, crude, Pacific Coast	4.2	3.9	4.3	7.2	5.6	5.1
Tallow, inedible, Chicago	5.1	4.7	5.6	8.5	8.2	8.2
Grease, house, N. Y.	4.8	4.3	5.3	8.4	8.1	8.0
Palm oil, crude, N. Y.	4.5	4.2	4.4	6.4	6.0	5.7
Olive oil foots, barrels, N. Y.	8.3	8.2	8.2	11.6	11.2n	11.2n
Palm-kernel oil, denatured, N.Y.	4.7	4.9n	4.2n	6.8	5.8	5.5
Babassu oil, tanks, N. Y. 3/	4/ 7.0n	6.9	7.1	1/10.0	8.9	8.4
Sardine oil, tanks, Pacific Coast	4.3	3.7n	4.0n	6.8	6.9n	5.9
Linseed oil, raw, Minn.	9.3	9.0	9.8	10.3	10.6	10.5
Tung oil, drums, N. Y.	17.4	18.7	18.9	14.4	13.1	12.9
Perilla oil, drums, N. Y.	7.8	8.5	9.7	11.6	11.3	11.6
Soybean oil, crude, f.o.b. mills	7.0	6.0	7.9	1/ 9.4	8.2	-
Menhaden oil, crude, f.o.b. Balto.	4.4	4.3	3.7n	5.5	5.8	5.3n
Hempseed oil, crude, N. Y.	8.4	8.4	8.6	-	-	-
Castor oil, No. 3, N. Y.	10.2	10.2	10.2	10.2	10.2	10.2
Cod oil, barrels, Newfoundland	5.3	5.3	5.5	6.8n	6.9n	6.9n

1/ Average for 6 months. 2/ Average for 4 months.

3/ Beginning February 1937, prices are futures. 4/ Average for 5 months.